Compact disc player 74CD593/01B/02B/05B

Service
Service
Service

45 049 A11

Service Manual

COMPACT disc DIGITAL AUDIO

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(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)
Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambiago identici a quelli specificati.

(F)
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

CLASS 1 LASER PRODUCT

3122 110 03420

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviço

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agrées, seuls habilités à réparer votre appareil en panne".

Subject to modification
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Printed in The Netherlands

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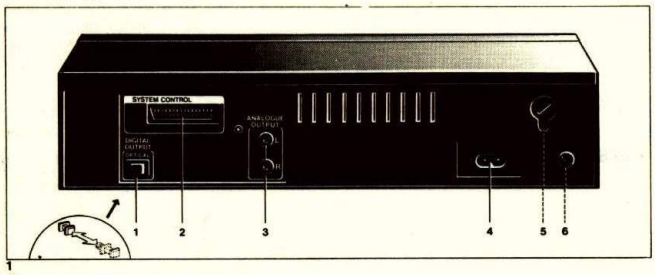

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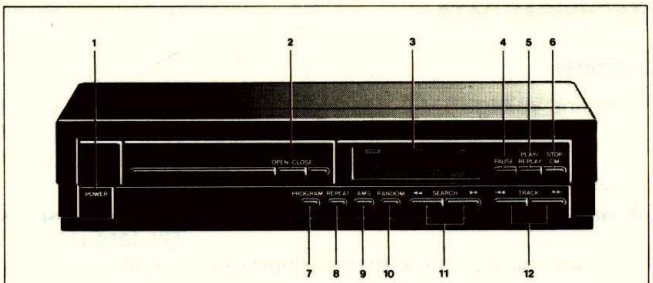

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45 050 A11

CONNECTIONS (Fig. 1)

1. Digital output optical

This output supplies a digital signal via an optical path; for this reason it can only be connected to a Digital Analog Converter, an amplifier with an optical digital input or a digital sound processor. To prevent dirt entering this output, it is covered with a little cap which should only be removed when the output is in use.

2. System control (multi connector)

For connecting the player to other equipment in a Marantz Midi System.
The **MULTI CONNECTOR** has the following connections:

REC SYNC

For making synchronised recordings. When the **MULTI CONNECTOR** is connected to the cassette deck, the recording will start when the player starts to play.

D-BUS

When the **MULTI CONNECTOR** is connected to the amplifier, the player canalso be operated using the remote control of the system.

EASY BUS
When the MULTI CONNECTOR is connected to the amplifier, source selector of the amplifier will be set automatically to the position when you start play with the **PLAY, RANDOM** or **AMS** key.

3. Analogue output

For the connecting cable to the amplifier.

- Insert a red plug into the 'R' socket (right-hand channel] and the other plug into the 'L' socket (left-hand channel).
- Insert the two other plugs into the corresponding sockets of the CD or AUX input of your amplifier. You can also use the TUNER or TAPE IN connection but *never* PHONO input!

4. Mains socket

- Insert the plug of the mains led (supplied) into the mains socket.
- Connect the other end to your mains supply.

5. mains fuse holder

(If voltage carousel has been mounted)

6. Voltage selector

(If voltage carousel has been mounted)

OPERATION

Front of player (Fig. 2)

1. POWER
Switching on and off.

2. OPEN/CLOSE
Opening and closing the disc tray.

3. DISPLAY
– Informs you about the functioning of the player.
– Displays details from the disc contents list.

4. PAUSE
– Interrupting play.

5. PLAY/REPLAY
– Starting play (**PLAY**)
– Returning to the beginning of a track (**REPLAY**).

6. STOP/CM
– Stopping play (**STOP**).
– Erasing a programme (**CM** = Clear Memory).

7. PROGRAM
– Storing tracks in a programme.
– Erasing tracks from a programme.
– Reviewing a programme.

8. REPEAT
Repeating a track, a disc or a programme.

9. AMS
Automatically playing the beginning of each track (**AMS** = Automatic Music Scan).

10. RANDOM
Playing in random order.

11. ◀◀ SEARCH ▶▶
Fast search for a particular passage; ◀◀ backwards to the beginning of the disc and ▶▶ forwards to the end of the disc.

12. ⏮ TRACK ⏭
Selecting:
– another track during play.
– a track to start play with.
– tracks when programming.
(⏮ from high to low; ⏭ from low to high).

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.
Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

MARANTZ INTERNATIONAL
Vestdijk 9
5600 MD Eindhoven
The Netherlands
Phone: +31/40.758290
Telefax: +31/40.75.82.99
Telex: 35000 PHTC NL routing IND NLMTFAT

ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified.
The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

BELGIUM
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

CHILE
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

DENMARK
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

FINLAND
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

GERMANY
MARANTZ GERMANY GmbH
Max-Planck-Strasse 22
6072 Dreieich 1
Germany
Telex: 529821

THE NETHERLANDS
Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 Oslo 6
Norway
Telex: 72640

GREAT BRITAIN
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

GREECE
SHERTON ELECTRONICS S.A.
P.O.Box 21025
Hippocratus Street 188
Athens 11471
Greece
Telex: 216.795

JAPAN
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

ITALY
MARANTZ ITALIANA S.P.A.
Via Chiese, 74
20126 Milano
Italy

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 401530

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

SPAIN
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

SWEDEN
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

SWITZERLAND
DYNAVOX ELECTRONICS
Route de Villars 105
1701 Fribourg
Switzerland
Telex: 942377

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

PORTUGAL
MARANTZ
Divisao philips S.A. service
Outurela-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

TECHNICAL DATA

General

1. Mains voltage	:	/02: 220 V (± 10%)
	:	/05: 240 V (± 10%)
	:	/01: 110-127-220-240 V by carousel switch
2. Mains frequency	:	50-60 Hz
3. Mains voltage selection	:	By soldering (-/02-/05 version)
		By carousel switch (-/01)
4. Power consumption mains, operated	:	15 W

External RC connection by means of 15p-flat connector

Specification: V-in Low: from -2,0 V to +1,6 V
V-in High: from +3 V to +7,5 V
R-in: from 47 kOhm to 68 kOhm

Line output

Number of channels	: 2
Output voltage	: 2 Vrms +/– 2 dB
Unbalance Left-Right	: max. +/– 1 dB
Output resistance	: 1kOhm
Amplitude linearity	: max. +/– 0,15 dB from 20 Hz to 20 kHz
Phase non-linearity	: max. +/– 1,0° from 20 Hz to 20 kHz
Signal to noise ratio	: min 90 dB from 20 Hz to 20 kHz
Dynamic range (–60 dB)	: min 82 dB from 20 Hz to 20 kHz
Total harmonic distortion + noise	: min 66 dB from 20 Hz to 20 kHz
Intermodulation distortion	: max. 0.05% (min 66 dB) from 20 Hz to 20 kHz
Out-band attenuation	: min 50 dB above 24,8 kHz from 20 Hz to 20 kHz
Channel separation	: min 80 dB from 20 Hz to 20 kHz
Muting during random access	: min 90 dB from 20 Hz to 20 kHz
Automatic switched de-emphasis with time constants	: 15/50 µs

Optical out
Dimensions and weight

Optical out transmitter		: Toslink TOTX
Apparatus tray closed	WxDxH	: 360 x 300 x 87 mm
Apparatus tray open	WxDxH	: 360 x 445 x 87 mm
Weight		: 3,5 kg

(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

ESD

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

SERVICING HINTS

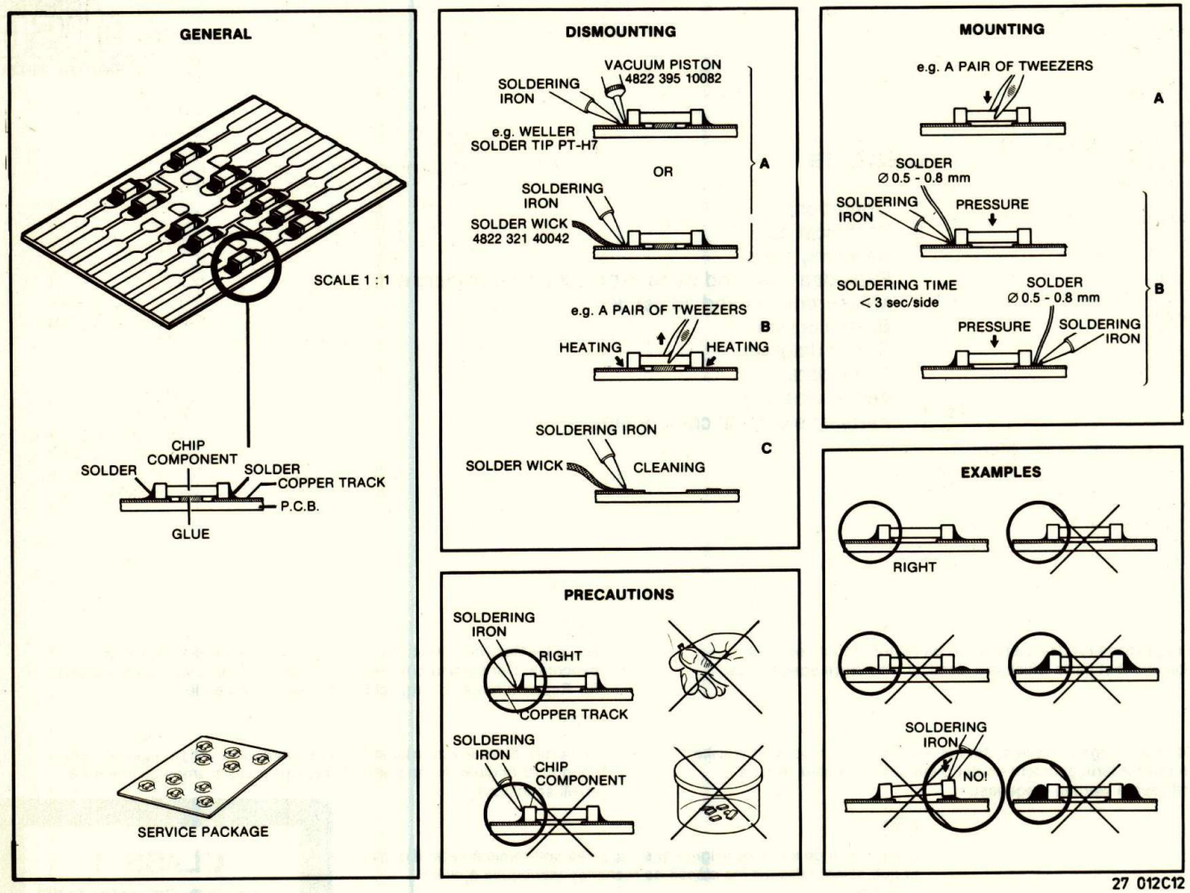
In the set chip components have been applied.
For disassembly and assembly of chip components see the figure below.

The disc should always rest properly on the turntable.
To achieve this a disc hold-down has been mounted in a bracket of the tray mechanism.
If the tray mechanism has to be disassembled for servicing, a seperate disc hold-down should be used.
(See drawing "Service disc hold-down")
The set can function normally then.
Code number of the disc hold-down is 4822 462 50383.

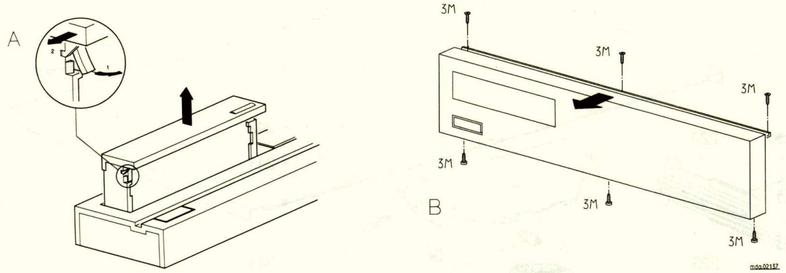
When the tray mechanism has been disassembled, the tray switch must be activated immediatly after pressing the play button in order to ensure normal operation. By servicing the apparatus in the upside down position it is also possible to short circuit SK2 on mains panel temporarily instead of activating the switch.

SERVICE TOOLS

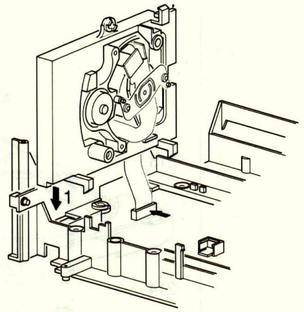
Audio signals disc	4822 397 30184
Disc without errors (test disc 5) + disc with DO errors, black spots and fingerprints (test disc 5A)	4822 397 30096
Disc 65 min 1 kHz without pause	4822 397 30155
Max. diameter disc(58.0 mm)	4822 397 60141
Torx screwdrivers	
Set (straight)	4822 395 50145
Set (square)	4822 395 50132
13th order filter	4822 395 30204
Service cable (4p)	4822 321 21284
Service flexfoil (14p)	4822 322 40066
Service connector (14p)	4822 267 50676
Green LED CQY G11	5322 130 32182



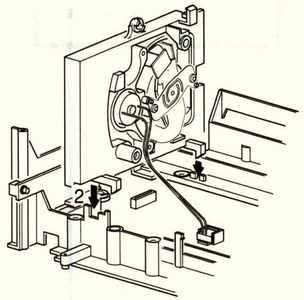
CABINET DISASSEMBLY HINTS



FOIL CONNECTION POSITION

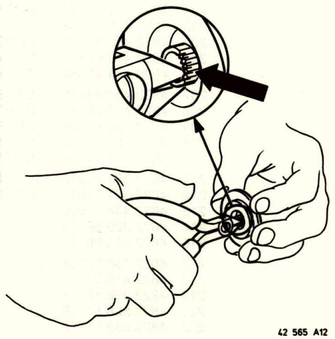


PREPARE SERVICE POSTITION PLAY



EVA.00848
916/T19

SERVICE DISC HOLD DOWN



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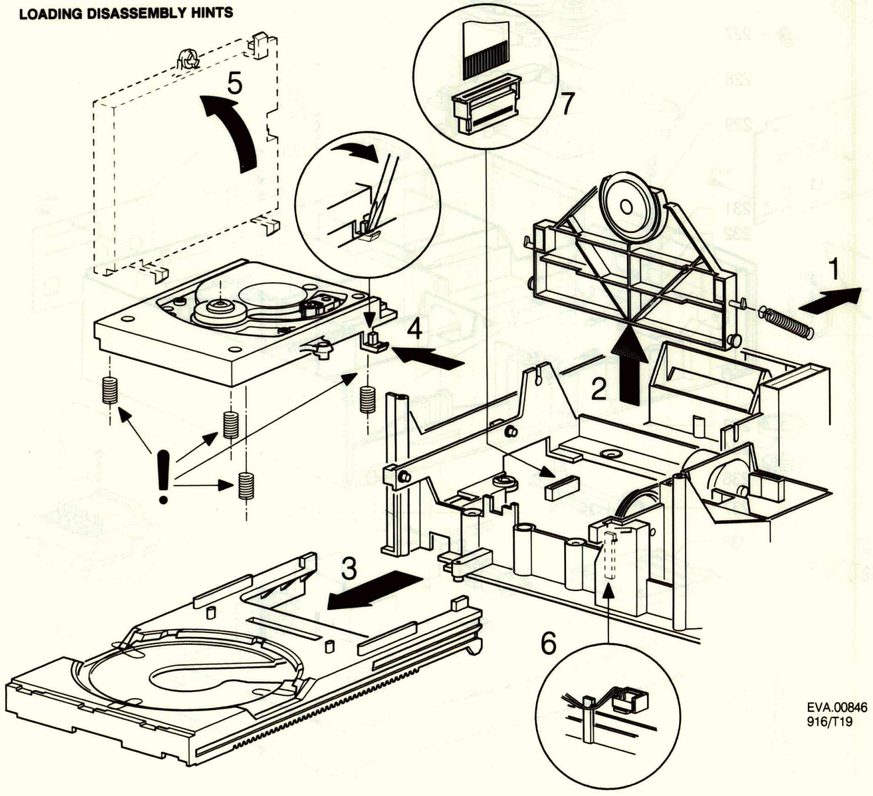
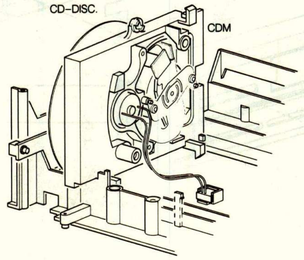
LOADING DISASSEMBLY HINTS



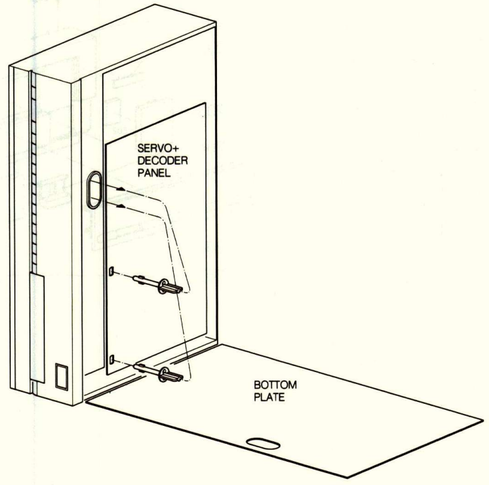
EVA.00846
916/T19

SERVICE POSITION PLAY



EVA.00849
916/T19

MEASURING AND ADJUSTMENT POSTION OF THE SET



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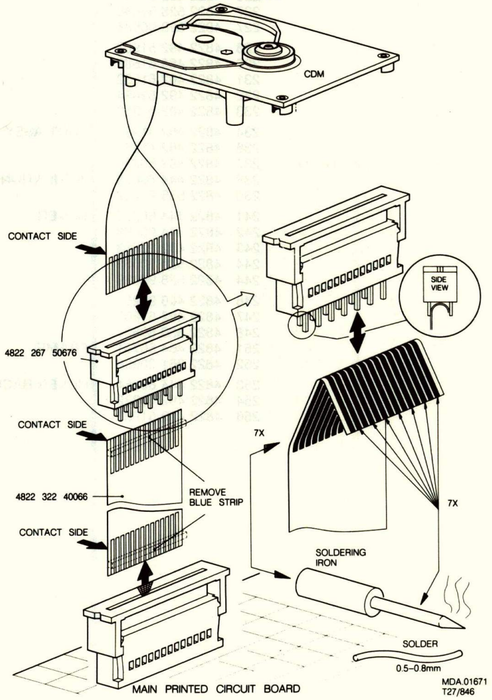
916/T19

EXTENSION CABLE



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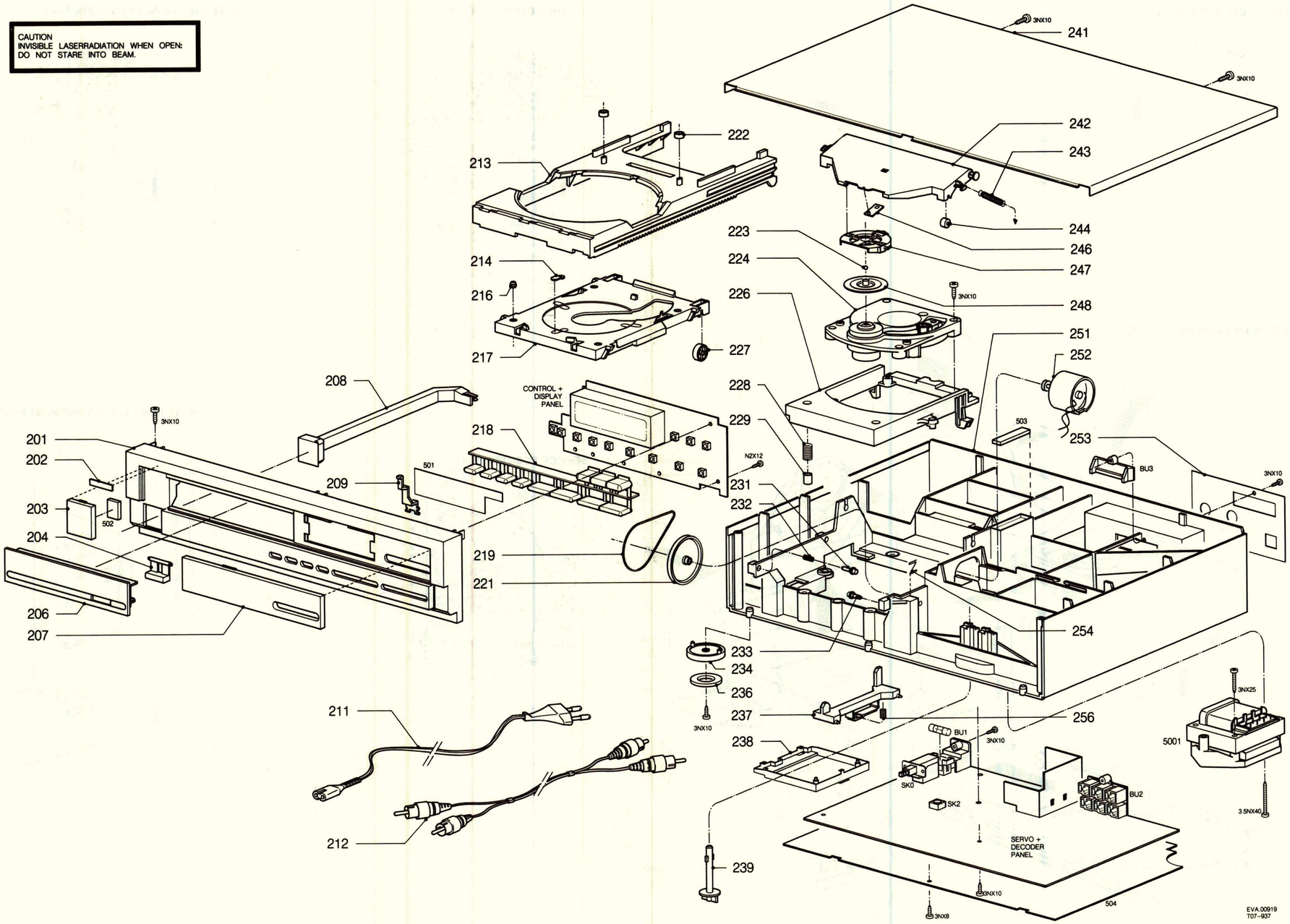
T27/846

MECHANICAL PARTLIST

201	4822 444 40333	FRONT ASSY
202	4822 459 10768	
203	4822 450 61476	LENS
204	4822 410 60413	TRAY BUTTON
206	4822 444 40334	TRAY FRONT
207	4822 450 61475	LENS ASSY
208	4822 410 60412	POWER KNOB
209	4822 402 61305	LEVER
211	4822 321 10457	CORD SET /02B
211	4822 321 10445	CORD SET /01B
211	4822 321 10522	CORD SET /05B
212	4822 321 22832	SBC1072
213	4822 444 50603	
214	4822 325 50176	
216	4822 325 50177	
217	4822 466 92251	
218	4822 410 26777	
219	4822 358 10115	
221	4822 528 81329	
222	4822 532 51756	
223	4822 520 40177	
224	4822 691 30209	
226	4822 402 61196	
227	4822 528 90638	
227	4822 528 90638	
228	4822 492 51902	
229	4822 466 61587	
231	4822 402 61252	
232	4822 492 52094	
233	4822 402 61253	
234	4822 462 41491	FOOT ASSY
236	4822 462 41267	
237	4822 402 50276	
238	4822 444 60655	INSULATION COVER
239	4822 535 71262	
241	4822 444 60652	COVER
242	4822 444 60568	
243	4822 492 32883	
244	4822 528 90639	
244	4822 528 90639	
246	4822 466 92257	
247	4822 402 61207	
248	4822 530 80503	
251	4822 464 50781	FRAME
252	4822 361 20998	
253	4822 444 60654	COVER BACKPLATE
254	4822 492 70332	
256	4822 492 51935	

CAUTION
INVISIBLE LASERRADIATION WHEN OPEN:
DO NOT STARE INTO BEAM.

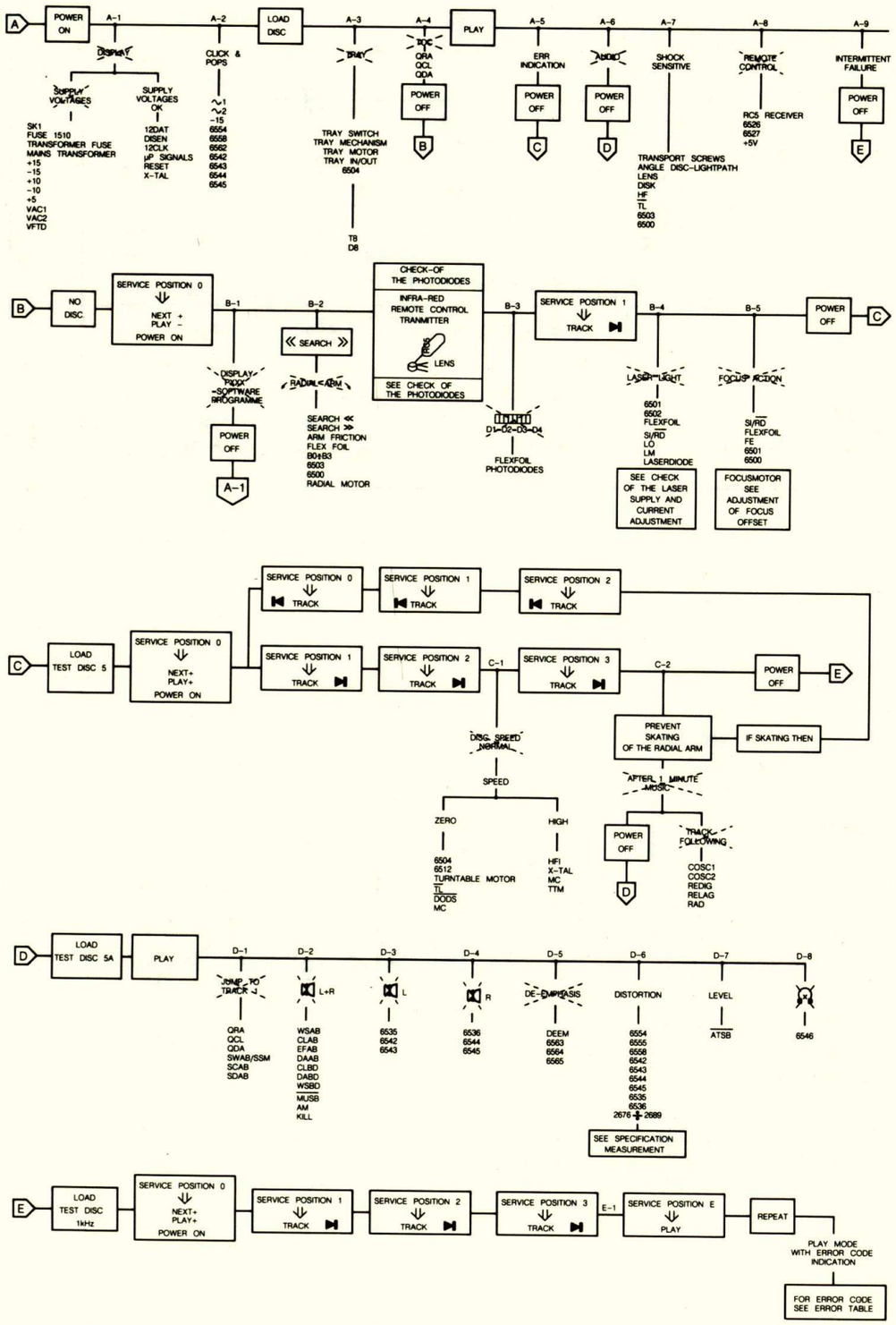


FAULTFINDING TREE

TROUBLE SHOOTING (FAULT FINDING TREE)

Follow the path of the faultfinding tree, beginning at the top left. Perform the actions you come across in the various blocks.
Look at the various side branches to find out if the information you see there applies to your problem. If, for instance, you find the indication display , this means that no picture appears on the display.

If you establish this fault, follow the branch and perform the recommended actions. Check the signals mentioned. In a number of branches further reference is made to measurements you could carry out. These measurements are explained in several tables further on in this manual.



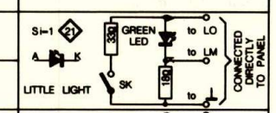
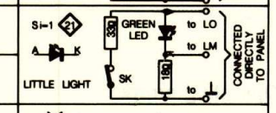
MDA.02201
T27/926

B-3 CHECK OF THE PHOTODIODES

Step	Signal	Mode	◇	∠	▭	⊓	Remarks
1	–	power on	4 ⊓ 6 ⊓ 7 ⊓ 8 ⊓	–	–	All signals must be equal	Signal depends on Distance lens ↔ IR LED of remote control

T-22387C

B4
CHECK OF LASER SUPPLY (WITH DEMOUNTED CDM AND ADDITIONAL CIRCUIT)

STEP	SIGNAL	MODE	◇	∠	▭	⊓	REMARKS
1	LO	SERV. POS. 2	9 (V)	–	1.8 < V < 2.3	–	
	LM	SK	11 (V)	–	170 < mV < 220	–	
2	LO	SERV. POS. 2	9 (V)	–	1.8 < V < 2.3	–	
	LM	SK	11 (V)	–	170 < mV < 220	–	
3	LO	POWER ON	9 (V)	–	0V ± 0.2V	–	

During the change over from SK closed to SK open, the LED will emit more light for a short moment.

MDA.01379
T-08 824

B4
LASER CURRENT ADJUSTMENT

STEP	SIGNAL	MODE	◇	∠	▭	⊓	REMARKS
1	–	POWER OFF	11 (Ω) GND	R3520	1k	–	PRE-ADJUSTMENT OHMIC VALUE
2	EYE-PATTERN HF	TEST DISC 5 PLAY	PIN 32 DECODER A (SAA7310) 0V GND	–	–	SEE DRAWING 37017B8	IF NO SIGNAL SEE: "START UP PROCEDURE"
3	LASER CURRENT ≙ VOLTAGE ACROSS R3501	TEST DISC 5 PLAY TRACK 1	1 (V) 2	R3520	50mV DC	–	HIGH-OHMIC MEASUREMENT

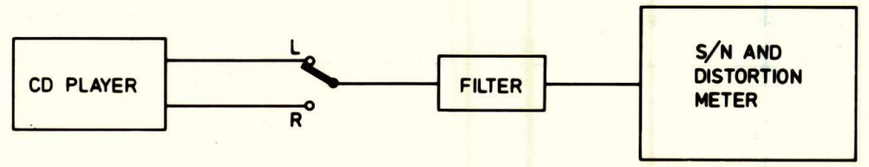
MDA.01778
T28/901

B5
ADJUSTMENT OF FOCUS-OFFSET

STEP	SIGNAL	MODE	◇	∠	▭	⊓	REMARKS
1	–	POWER ON	–	R3569	–	–	ADJUST FOR OPTICAL MID-POSITION
2	FE LAG	PLAY TEST DISC 5 TRACK 1	27	R3569	400mV ±40mV DC	–	FINE ADJUSTMENT

MDA.01381
T-08 824

SPECIFICATION MEASUREMENT



e.g. SOUND TECHNOLOGY ST 1700B

30 459 A12

CS 25 292

ERROR TABLE

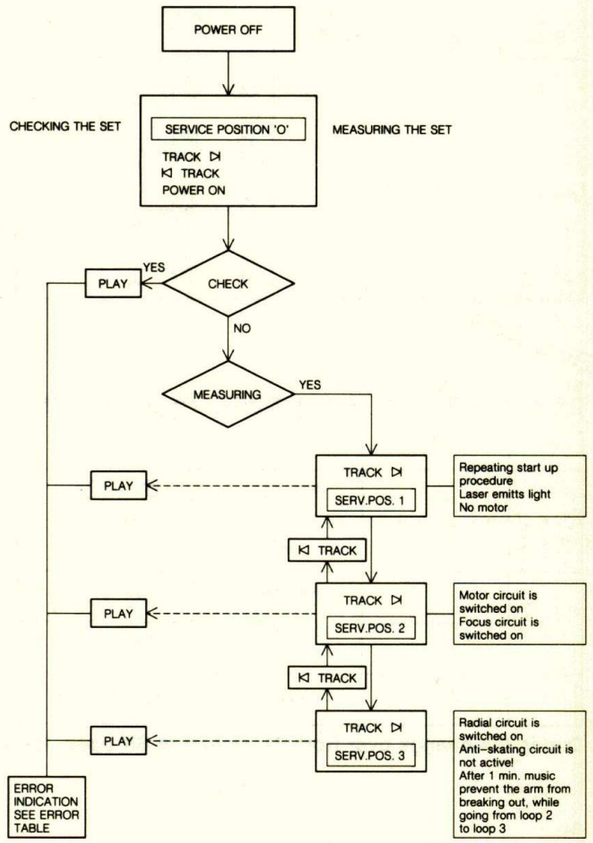
System errors

Indication	Cause	Check
Er 02	No $\overline{TL}$ pulse at start-up.	$\overline{Si}$, Sc, RD, Photodiode signal processor $\overline{TL}$, HFI, CD disc present?
Er 03	No Lead-in track found	CD disc, radial arm position, REdig, Radial error processor
Er 05	$\overline{TL}$ pulse low > 50ms during PLAY	CD disc, HFI
Er 06	No $\overline{TL}$ pulse with 0.5 sec. during track jumping	RE-lag circuit, $\overline{TL}$, REdig
Er 07	Subcode error during PLAY	HFI
Er 08	TOC error	CD disc, turntable motor control, radial arm position

Operating errors

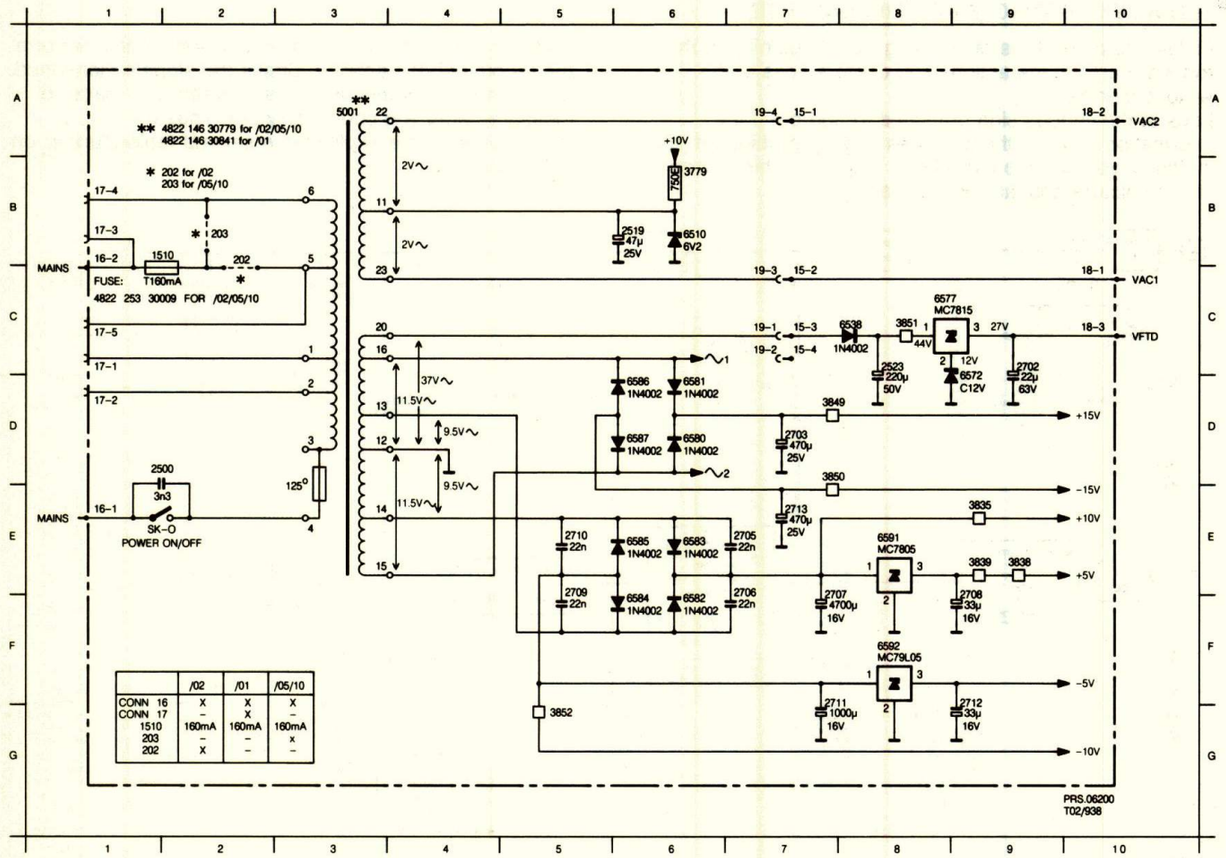
Er 30: NEXT when repeat is off.
Er 31: PREVIOUS when repeat is off.
Er 32: INDEX selected when no track selected.
Er 33: Selected index does not exist on this CD.
Er 34: Review error: no program.
Er 35: Program memory full.
Er 36: Programmed track is non existing on this CD.
Er 37: Selected track is non existing on this CD.
Er 60: Fast forward bound.
Er 61: Fast reverse bound.

SERVICE LOOP



MDA 02157
T27/918

1510 B 2 2500 D 2 2702 C 9 2706 E 7 2709 E 5 2712 F 9 3835 E 9 3849 D 7 3852 G 5 6538 C 8 6580 D 6 6583 E 6 6586 D 6 6592 F 8
202 B 2 2519 B 6 2703 D 7 2707 E 8 2710 E 5 2713 E 7 3838 E 9 3850 D 7 5001 A 3 6572 D 9 6581 D 6 6584 F 6 6587 D 6 SK-O E 2
203 B 2 2523 C 8 2705 E 7 2708 E 9 2711 F 8 3779 B 6 3839 E 9 3851 C 8 6510 B 6 6577 C 8 6582 F 6 6585 E 6 6591 E 8



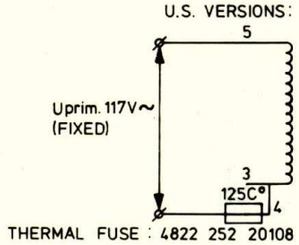
	/02	/01	/05/10
CONN 16	X	X	X
CONN 17	–	X	–
1510	160mA	160mA	160mA
203	–	–	X
202	X	–	–

D6
SPECIFICATIONS MEASUREMENT

Signal	Mode	◇	☎		Remarks
BU2-L	Test disc 3, play total harmonic distorsion	filter output	See spec.		See drawing 30459A12
BU2-R	Test disc 3, play total harmonic distorsion	filter output	See spec.		See drawing 30459A12
BU2-L	Test disc 3, play signal-to-noise ratio	filter output	See spec.		See drawing 30459A12
BU2-R	Test disc 3, play signal-to-noise ratio	filter output	See spec.		See drawing 30459A12

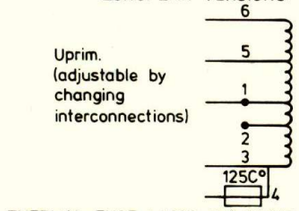
T-22255O

U.S. VERSIONS:

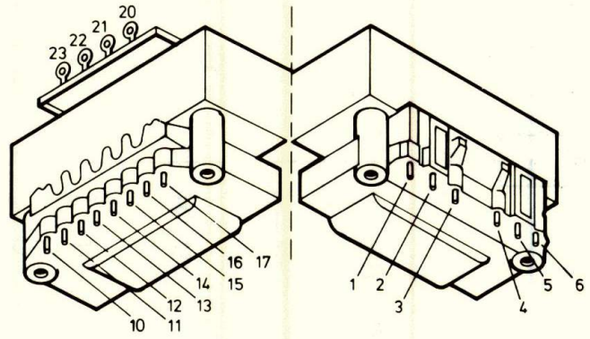


THERMAL FUSE : 4822 252 20108

EUROPEAN VERSIONS:

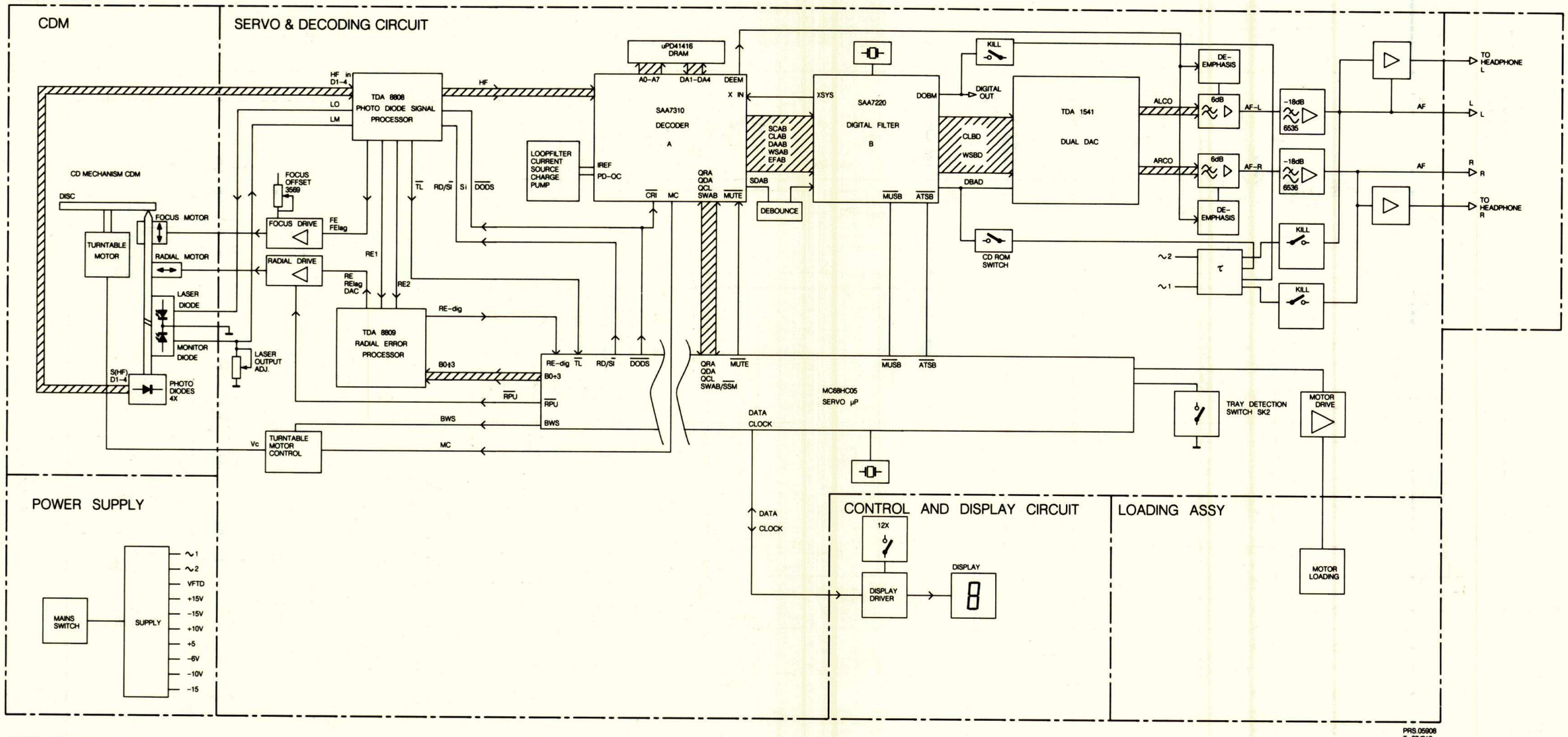


THERMAL FUSE : 4822 252 20017



44 737 A11

BLOCK DIAGRAM



PRS.05908
T-27/918

DECODING SIGNALS

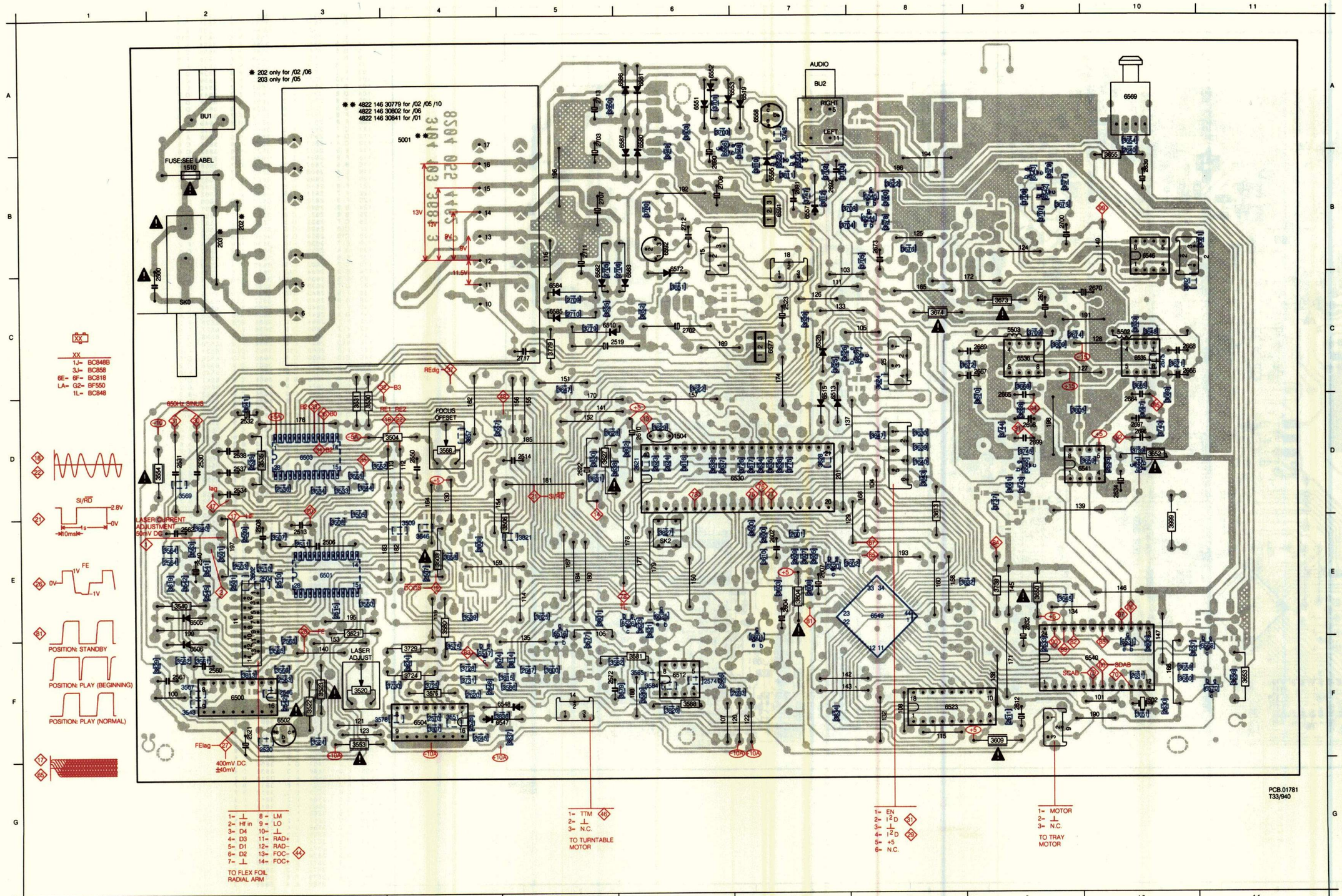
$\overline{\text{ATSB}}$	– Attenuation of Audio level in search position (Cueing)
CD ROM switch	– Digital Data information on disc signal
CEFM	– Clock Eight-to-Fourteen Modulator
CLAB	– Clock signal Decoder-A to Filter-B
CLBD	– Clock signal Filter-B to DAC
$\overline{\text{CREF}}$	– Reference Current
$\overline{\text{CRI}}$	– Counter Reset Inhibit
DAAB	– Data signal Decoder-A to Filter-B
DABD	– Data signal Filter-B to DAC
DEEM	– Deemphasis
DOBM	– Digital out signal
$\overline{\text{EFAB}}$	– Error flag Decoder-A to Filter-B
$\overline{\text{MUTE}}$	– Mute signal
$\overline{\text{MUSB}}$	– Soft Mute signal
PD/OC	– Phase detector - oscillator control
QCL	– Q-channel Clock signal
QDA	– Q-channel Data signal
QRA	– Q-channel Request Aknowledge
SCAB	– Subcode clock Decoder-A to Filter-B
SDAB	– Subcode data Decoder-A to Filter-B
SWAB/SSM	– Subcode Word/Start-stop motor signal
WSAB	– Word select Decoder-A to Filter-B
WSBD	– Word select Filter-B to DAC
XIN	– Oscillator signal in Decoder-A
XSYS	– Oscillator signal out Filter-B

SERVO SIGNALS

AGC	– Automatic Gain Control
B0-B3	– Control bits for radial cicuit
BEQ	– Equalizer reference current input
BGC	– DC and LF gain control reference input
BWS	– Band Width Switch 8/12 cm disc
Cosc1	– Capacitor wobble oscillator
Cosc2	– Capacitor wobble oscillator
DEC	– Decoupling input of inkruat bypass
DET	– HF detector voltage input
$\overline{\text{DIV4}}$	– Divide by 4 input
$\overline{\text{DODS}}$	– Drop out detector suppression
D1+4	– Photodiode currents
FE	– Focus error signal
FE lag	– Focus error signal for LAG network
HF	– HF output for DEMOD
HFD	– HF detector output for DEMOD
HF-in	– HF current input to HF amplifier
HF-out	– HF amplifier and equalizer voltage output
LM	– Laser monitor diode input
LO	– Laser amplifier current output
MC	– Motor control signal
offset IN	– Offset control output
offset OUT	– Offset control output
PLLH	– PLL on hold output
RADout	– Output of RE2-RE1 input
RE	– Radial error signal (Amplifier RE_2-RTE_1 currents)
Rosc	– Resitor wobble oscillator
Rwob	– Wobble generator input
RE1	– Radial error signal 1 (summation of amplified currents D_3 and D_4)
RE2	– Radial error signal 2 (summation of amplified currents D_1 and D_2)
RE dig	– Radial error digital
RE lag	– Radial error signal for LAG network
Sc	– Starting up capacitor input
SI/$\overline{\text{RD}}$	– On/off control for laser supply and focus cicuit. Ready signal, Starting up procedure succesfull.
$\overline{\text{TCMP}}$	– Turntable control motor pulse
$\overline{\text{TL}}$	– Track loss output signal
TTM–	– Control voltage for turntable motor
TTM+	– Control voltage for turntable motor
Vext–	– Supply connection
Vext+	– Supply connection

| | | |

MAIN PANEL



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14	F 5	2545	E 2	3586	F 5	3834	F 7	15	B 6	2546	F 3	3588	F 6	3835	C 5
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100	F 2	2561	F 2	3602	E 8	3838	D 6	101	F10	2562	E 2	3603	E 7	3839	C 7
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107	F 6	2570	F 4	3610	E 7	3847	D 6	108	F 8	2572	F 6	3613	F 6	3848	A 7
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172	C 9	2708	B 6	3700	A 6	6562	B 7	174	C 7	2709	C 5	3701	A 6	6564	D10
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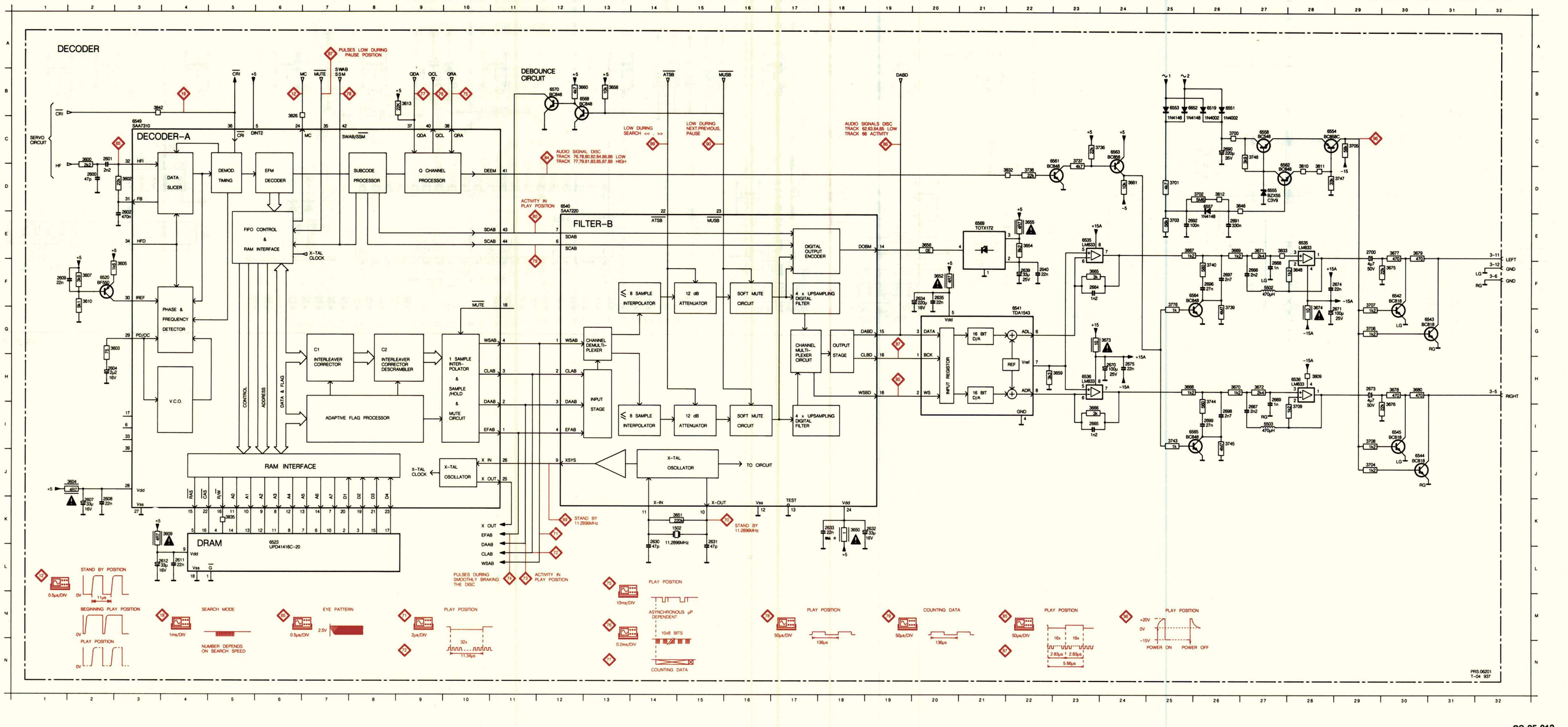
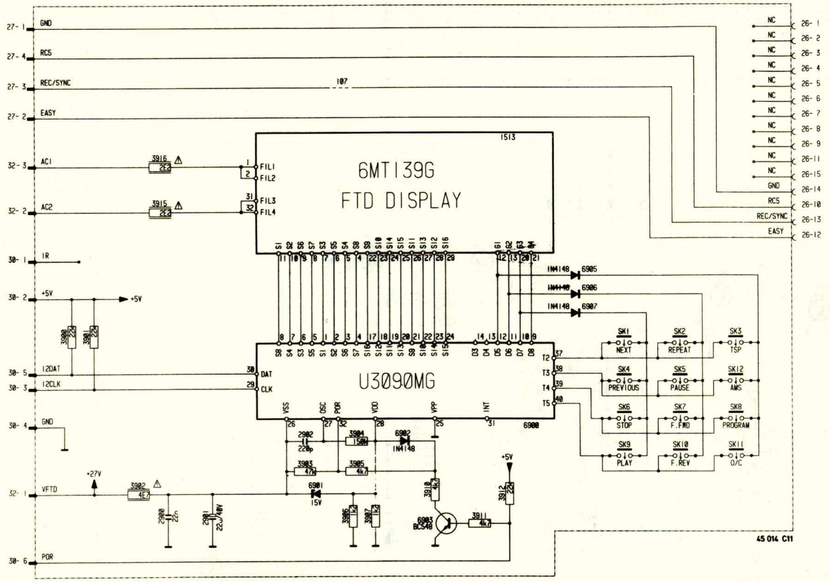
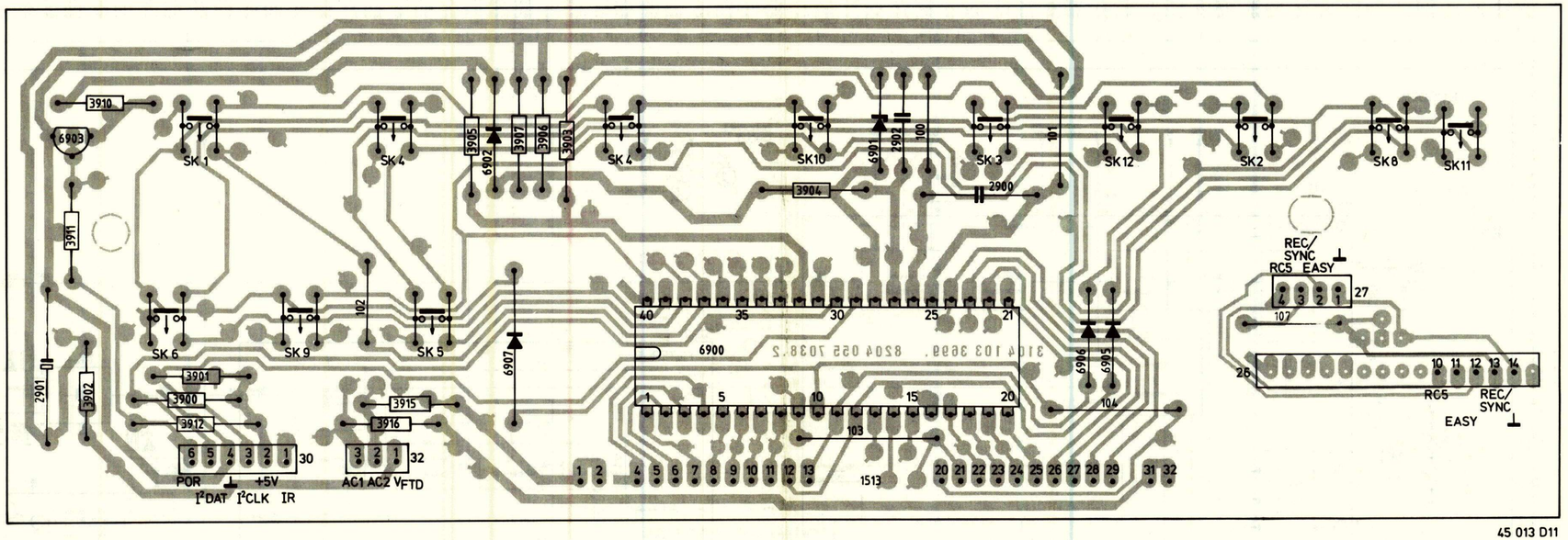
191	C	10	3510	E	2	3731	F	4	6591	B	7	
192	B	6	3520	F	3	3737	D	9	6592	B	6	
193	E	8	3521	E	3	3738	E	9	6601	E	7	
194	B	8	3522	F	3	3739	D	10	BU1	A	2	
195	E	3	3523	F	3	3740	D	10	BU2	A	7	
196	B	5	3524	F	3	3743	D	9	SK0	C	2	
197	E	2	3530	D	3	3744	D	9	SK2	E	6	
198	D	9	3531	D	3	3745	D	9				
199	E	2	3533	D	3	3747	B	7				
201	D	7	3534	D	3	3748	A	7				
202	B	2	3535	D	2	3775	D	7				
203	B	2	3539	E	4	3779	C	5				
1502	F	10	3540	E	2	3779	G	5				
1504	D	6	3541	E	2	3780	B	6				
1510	B	2	3542	E	2	3800	F	5				
2500	B	2	3543	F	2	3801	E	5				
2501	E	2	3551	F	4	3802	D	6				
2503	E	2	3552	D	3	3803	A	6				
2504	E	3	3553	F	3	3805	D	10				
2506	E	3	3554	D	2	3806	F	10				
2507	E	4	3555	D	3	3807	F	4				
2508	E	2	3557	D	4	3808	E	4				
2509	E	2	3560	E	3	3809	C	9				
2510	E	3	3561	F	2	3810	B	7				
2511	E	3	3562	F	2	3811	B	7				
2513	E	3	3563	E	2	3812	B	7				
2514	D	5	3564	E	2	3813	F	2				
2515	E	3	3565	F	3	3814	F	5				
2519	C	6	3566	F	3	3815	F	5				
2520	F	2	3567	F	2	3816	D	6				
2521	F	2	3568	D	4	3819	E	2				
2523	C	7	3569	D	2	3821	E	5				
2528	F	4	3574	F	4	3822	B	8				
2530	D	2	3575	F	4	3824	F	4				
2531	D	2	3576	F	4	3825	E	5				
2532	D	2	3577	E	5	3826	F	6				
2534	D	2	3578	F	3	3827	E	6				
2535	D	2	3579	F	6	3828	D	7				
2536	D	3	3580	E	4	3829	F	2				

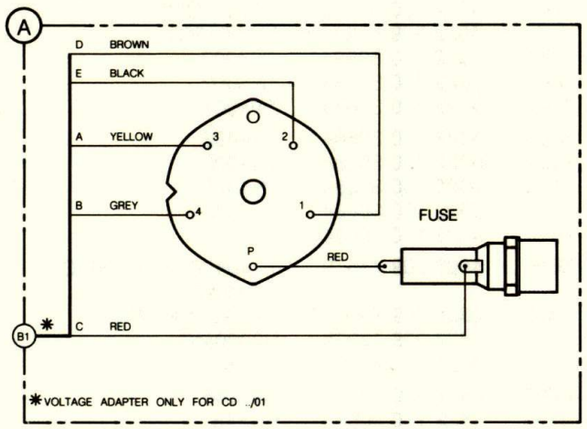

DECODER
DECODER-A
SAA7310
SERVO CIRCUIT
DATA SLICER
DEMOD. TIMING
EFM DECODER
SUBCODE PROCESSOR
Q CHANNEL PROCESSOR
FIFO CONTROL & RAM INTERFACE
PHASE & FREQUENCY DETECTOR
V.C.O.
C1 INTERLEAVER CORRECTOR
C2 INTERLEAVER CORRECTOR DESCRAMBLER
ADAPTIVE FLAG PROCESSOR
1 SAMPLE INTER-POLATOR & SAMPLE /HOLD & MUTE CIRCUIT
RAM INTERFACE
DRAM
UPD41416C-20
DEBOUNCE CIRCUIT
FILTER-B
SAA7220
8 SAMPLE INTERPOLATOR
12 dB ATTENUATOR
SOFT MUTE CIRCUIT
4 x UPSAMPLING DIGITAL FILTER
DIGITAL OUTPUT ENCODER
CHANNEL DEMULTI-PLEXER
CHANNEL MULTI-PLEXER CIRCUIT
INPUT STAGE
OUTPUT STAGE
INPUT REGISTER
16 BIT D/A
TDA1543
X-TAL OSCILLATOR
11,2896MHz
TO CIRCUIT
STAND BY 11.2896MHz
PULSES LOW DURING PAUSE POSITION
LOW DURING SEARCH << >>
LOW DURING NEXT,PREVIOUS, PAUSE
AUDIO SIGNAL DISC TRACK 76,78,80,82,84,86,88 LOW TRACK 77,79,81,83,85,87,89 HIGH
AUDIO SIGNALS DISC TRACK 62,63,64,65 LOW TRACK 66 ACTIVITY
ACTIVITY IN PLAY POSITION
PULSES DURING SMOOTHLY BRAKING THE DISC
LEFT
RIGHT
GND
LG
RG
PRS.06201
T-04 937

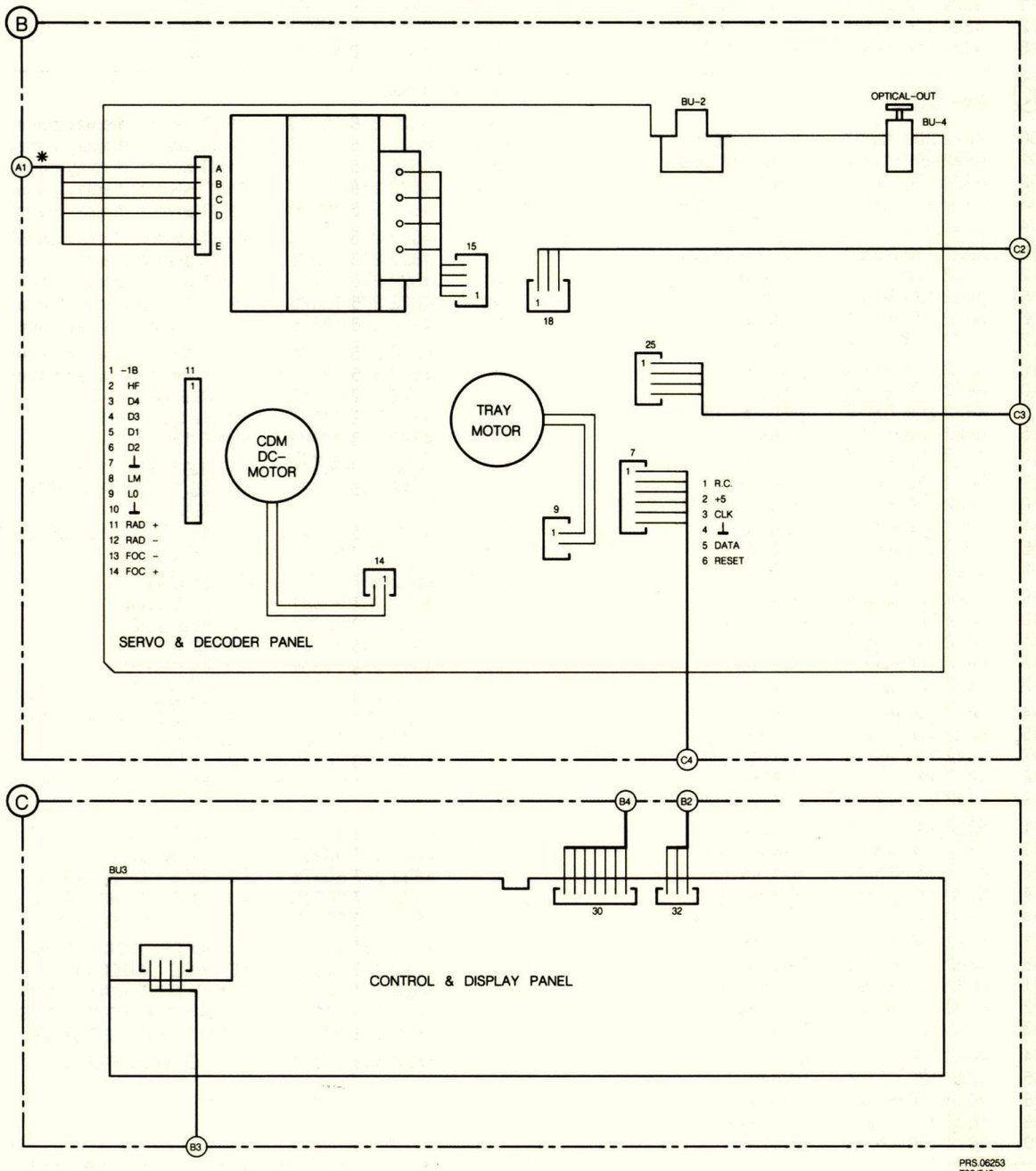

6MT139G
FTD DISPLAY
U3090MG
GND
RCS
REC/SYNC
EASY
AC1
AC2
IR
+5V
I2DAT
I2CLK
GND
VFTD
POR
NC
45 014 C11


SK 1
SK 4
SK10
SK 3
SK12
SK2
SK 8
SK11
SK 6
SK 9
SK 5
6900
REC/
SYNC
RC5 EASY
RC5
REC/
SYNC
EASY
POR +5V I²DAT I²CLK IR
AC1 AC2 VFTD

45 013 D11

WIRING DIAGRAM





Electrical parts

2500	4822 126 10005	3,3nF 20% 400V
2501	4822 122 33147	22nF 20%
2503	4822 122 33147	22nF 20%
2504	4822 122 31727	470pF 5% 63V
2506	4822 122 10166	22nF 30% 16V
2507	4822 122 31644	2,2nF 10% 63V
2508	5322 121 42604	47nF 5% 63V
2509	4822 122 31765	100pF 5% 50V
2510	4822 122 32442	10nF 10% 50V
2511	4822 122 31746	1nF 5% 50V
2513	4822 121 42245	220nF 10% 63V
2514	4822 121 51252	470nF 5% 100V
2515	4822 122 31746	1nF 5% 50V
2519	4822 124 22027	47µF 20% 25V
2520	4822 122 31965	220pF 5% 63V
2521	4822 124 40272	33µF 20% 16V
2523	4822 124 41595	220µF 20% 50V
2528	4822 122 33104	100nF 10% 63V
2530	4822 121 51321	8,2mF 1% 63V
2531	4822 121 51321	8,2mF 1% 63V
2532	4822 124 40272	33µF 20% 16V
2534	5322 121 42661	330nF 5% 63V
2535	5322 122 31848	33nF 10% 63V
2536	5322 122 31848	33nF 10% 63V
2537	4822 121 42245	220nF 10% 63V
2538	4822 121 42245	220nF 10% 63V
2540	4822 124 41583	680nF 20% 50V
2542	4822 122 33147	22nF 20%
2545	4822 122 33104	100nF 10% 63V
2546	4822 122 33147	22nF 20%
2550	5322 121 42604	47nF 5% 63V
2560	4822 121 51314	4,7nF 5% 50V
2561	4822 121 51252	470nF 5% 100V
2562	5322 121 42661	330nF 5% 63V
2563	4822 122 33104	100nF 10% 63V
2566	4822 122 33147	22nF 20%
2570	4822 122 31644	2,2nF 10% 63V
2572	5322 121 42661	330nF 5% 63V
2574	4822 122 31759	18nF 10%
2600	4822 122 31772	47pF 5% 50V
2601	4822 122 31644	2,2nF 10% 63V
2602	4822 121 51252	470nF 5% 100V
2604	4822 124 41576	2,2µF 20% 50V
2607	4822 124 40272	33µF 20% 16V
2608	4822 122 33147	22nF 20%
2609	4822 122 33147	22nF 20%
2610	4822 124 22027	47µF 20% 25V
2611	4822 122 33147	22nF 20%
2612	4822 124 40272	33µF 20% 16V
2620	4822 122 33147	22nF 20%
2621	4822 122 33147	22nF 20%
2622	4822 124 22031	4,7µF 20% 63V
2623	4822 122 31772	47pF 5% 50V
2624	4822 122 31772	47pF 5% 50V
2630	4822 122 31772	47pF 5% 50V
2631	4822 122 31772	47pF 5% 50V
2632	4822 124 40272	33µF 20% 16V
2633	4822 122 33147	22nF 20%
2634	4822 124 40196	220µF 20% 16V
2635	4822 122 33147	20nF 20%
2639	4822 124 40272	33µF 20% 16V
2640	4822 122 32863	22nF 20%
2645	4822 122 33147	20nF 20%
2646	4822 122 33104	100nF 10% 63V
2664	4822 121 51309	1,2nF 5% 50V
2665	4822 121 51309	1,2nF 5% 50V
2666	4822 121 51325	2,2nF 5% 50V

2667	4822 121 51325	2,2nF 5% 50V
2668	4822 121 51324	1,2nF 5% 50V
2669	4822 121 51324	1,2nF 5% 50V
2670	4822 124 41528	100µF 20% 25V
2671	4822 124 41528	100µF 20% 25V
2673	4822 124 41577	4,7µF 20% 50V
2674	4822 122 33147	22nF 20%
2675	4822 122 33147	22nF 20%
2690	4822 124 41572	220µF 20% 35V
2691	5322 121 42661	330nF 5% 63V
2692	5322 121 42386	100nF 5% 63V
2693	4822 122 33147	22nF 20%
2696	4822 121 42888	27nF 5% 50V
2697	4822 121 51312	2,7nF 5% 50V
2698	4822 121 51312	2,7nF 5% 50V
2699	4822 121 42888	27nF 5% 50V
2700	4822 124 41577	4,7µF 20% 50V
2702	4822 124 22337	22µF 20% 63V
2703	4822 124 23031	470µF 20% 25V
2705	4822 122 33147	22nF 20%
2706	4822 122 33147	22nF 20%
2707	4822 124 41458	4700µF 20% 16V
2708	4822 124 40272	33µF 20% 16V
2709	4822 122 33147	22nF 20%
2710	4822 122 33147	22nF 20%
2711	4822 124 41571	1000µF 20% 16V
2712	4822 124 40272	33µF 20% 16V
2713	4822 124 23031	470µF 20% 25V
2900	4822 122 10166	22nF 30% 16V
2901	5322 124 21643	22µF 20% 40V
2902	4822 122 10172	220pF 10% 50V

3501	5322 116 80445	4,7k 1% 0,125W
3502	5322 116 80429	100k 1% 0,125W
3503	4822 111 30499	4,7Ω 5% 0,33W
3504	4822 111 30499	4,7Ω 5% 0,33W
3505	4822 111 90253	12k 2% 0,125W
3506	4822 116 52389	100Ω 5% 0,5W
3507	5322 116 80427	1k 1% 0,125W
3508	4822 111 90512	24k 2% 0,25W
3509	4822 116 81208	5,6k 1% 0,125W
3510	4822 111 90249	10k 2% 0,25W
3520	4822 101 10685	Trimpot. LIN 4k7 20% 0.05W
3521	4822 116 52849	220Ω 1% 0,5W
3522	4822 111 30515	18Ω 5% 0,33W
3523	4822 111 30511	12Ω 5% 0,33W
3524	5322 116 80426	100Ω 1% 0,125W
3533	5322 111 90268	5,1k 2% 0,25W
3534	4822 111 90197	220k 2% 0,25W
3535	4822 116 53081	12k 1% 0,6W
3539	4822 111 90251	22k 2% 0,25W
3540	4822 111 30499	4,7Ω 5% 0,33W
3541	4822 111 90544	6,8k 2% 0,25W
3542	4822 116 90539	33Ω 5% 0,25W
3543	4822 111 90544	6,8k 2% 0,125W
3551	4822 116 81206	22Ω 1% 0,4W
3552	5322 111 90101	1,8k 2% 0,25W
3553	4822 111 30483	1Ω 5% 0,33W
3554	4822 111 30483	1Ω 5% 0,33W
3555	4822 111 90238	18k 2%
3557	4822 111 90197	220k 2% 0,25W
3560	4822 111 91494	11k 2%
3561	4822 116 90417	150k 2%
3562	4822 111 90568	120k 2% 0,25W
3563	4822 111 90573	56k 2% 0,25W
3564	4822 111 91495	160k 2%

3565	5322 111 90105	27Ω 2% 0,25W
3566	4822 116 81206	22Ω 1% 0,4W
3567	4822 111 90575	82k 2% 0,125W
3568	4822 100 20522	Trimpot. LIN 22k 20% 0,05W
3569	5322 116 80447	470k 1% 0,125W
3574	5322 116 80441	33k 1% 0,125W
3575	5322 116 80445	4,7k 1% 0,125W
3576	4822 116 52848	200k 1% 0,6W
3577	4822 116 90418	1,2k 2%
3578	4822 111 90575	82k 2% 0,25W
3579	4822 116 90417	150k 2%
3580	4822 116 52426	4,7k 5% 0,5W
3581	4822 116 53105	3,3k 1% 0,6W
3582	4822 111 90572	5,6k 2% 0,25W
3584	4822 111 91492	91k 2%
3585	4822 111 90214	100k 2% 0,25W
3586	4822 111 90368	680k 2% 0,125W
3588	4822 116 52472	47k 5% 0,5W
3589	5322 116 80445	4,7k 1% 0,125W
3600	4822 111 90248	2,2k 2% 0,25W
3602	4822 111 90251	22k 2% 0,25W
3603	4822 111 90371	75Ω 2% 0,25W
3604	4822 111 30499	4,7Ω 5% 0,33W
3605	5322 111 90265	1,6k 2% 0,25W
3607	4822 111 90571	3,9k 2% 0,25W
3609	4822 111 30499	4,7Ω 5% 0,33W
3610	4822 111 90373	9,1k 2% 0,25W
3612	4822 116 81165	1M 1% 0,125W
3613	4822 111 90251	22k 2% 0,25W
3617	4822 111 90251	22k 2% 0,25W
3620	4822 111 90238	180k 5% 0,25W
3621	4822 111 90238	180k 5% 0,25W
3622	5322 116 80446	47k 1% 0,125W
3623	4822 111 90238	180k 5% 0,25W
3624	4822 111 90248	2,2k 2% 0,25W
3625	4822 111 90249	10k 2% 0,25W
3626	4822 111 90249	10k 2% 0,25W
3627	4822 111 30499	4,7Ω 5% 0,33W
3628	4822 111 90251	22k 2% 0,25W
3629	4822 111 90197	220k 2% 0,25W
3630	4822 111 90251	22k 2% 0,25W
3634	4822 111 90251	22k 2% 0,25W
3635	4822 111 90251	22k 2% 0,25W
3636	4822 111 90251	22k 2% 0,25W
3637	4822 111 90251	22k 2% 0,25W
3638	4822 111 90251	22k 2% 0,25W
3639	4822 111 90251	22k 2% 0,25W
3640	4822 111 90251	22k 2% 0,25W
3645	5322 116 80445	4,7k 1% 0,125W
3646	4822 111 90251	22k 2% 0,25W
3647	4822 111 90251	22k 2% 0,25W
3648	5322 111 90096	1,2k 2% 0,25W
3650	4822 111 30483	1Ω 5% 0,33W
3651	4822 111 90197	220k 2% 0,25W
3652	4822 111 30499	4,7Ω 5% 0,33W
3659	4822 111 91183	3,3k 2%
3661	4822 111 90249	10k 2% 0,25W
3665	4822 116 90416	3k 2%
3666	4822 116 90416	3k 2%
3667	4822 116 90418	1,2k 2%
3668	4822 116 90418	1,2k 2%
3669	4822 116 90418	1,2k 2%
3670	4822 116 90418	1,2k 2%
3671	4822 116 90271	2,4k 2%
3672	4822 116 90271	2,4k 2%
3673	4822 111 30508	10Ω 5% 0,33W
3674	4822 111 30508	10Ω 5% 0,33W
3675	4822 111 90251	22k 2% 0,25W
3676	4822 111 90251	22k 2% 0,25W
3677	5322 116 80444	470Ω 1% 0,125W
3678	5322 116 80444	470Ω 1% 0,125W
3679	5322 116 80444	470Ω 1% 0,125W
3680	5322 116 80444	470Ω 1% 0,125W
3681	5322 116 80431	150Ω 5%
3682	5322 116 80431	150Ω 5%
3691	4822 111 90251	22k 2% 0,25W
3692	4822 111 90251	22k 2% 0,25W
3700	4822 111 90163	jumper
3701	5322 116 80445	4,7k 1% 0,125W
3702	4822 111 90425	5,6M 5% 0,25W
3703	4822 116 90541	56k 5% 0,125W
3704	5322 111 90096	1,2k 2% 0,25W
3705	4822 116 90541	56k 5% 0,125W
3706	5322 111 90096	1,2k 2% 0,25W
3707	5322 111 90096	1,2k 2% 0,25W
3708	5322 111 90096	1,2k 2% 0,25W
3709	5322 111 90096	1,2k 2% 0,25W
3724	4822 116 53081	12k 1% 0,6W
3725	4822 111 90253	12k 2% 0,25W
3726	4822 111 90251	22k 5%
3728	5322 116 80445	4,7k 1% 0,125W
3729	4822 116 53081	12k 1% 0,6W
3730	4822 111 90253	12k 2% 0,25W
3731	4822 116 81206	22Ω 1% 0,4W
3736	4822 111 90251	22k 2% 0,25W
3737	5322 116 80445	4,7k 1% 0,125W
3738	4822 111 90251	22k 2% 0,25W
3739	4822 111 90423	4,7M 5% 0,25W
3740	5322 111 90113	560Ω 2%
3743	5322 116 80427	1k 1% 0,125W
3744	5322 111 90113	560Ω 2%
3745	4822 111 90423	4,7M 5% 0,25W
3747	5322 116 80441	33k 1% 0,125W
3748	4822 111 90571	3,9k 2% 0,25W
3775	4822 111 90251	22k 2% 0,25W
3776	5322 116 80427	1k 1% 0,125W
3779	5322 111 90306	750Ω 5%
3800	4822 111 90163	jumper
3801	4822 111 90163	jumper
3802	4822 111 90163	jumper
3803	4822 111 90163	jumper
3804	4822 111 90163	jumper
3805	4822 111 90163	jumper
3806	4822 111 90163	jumper
3807	4822 111 90163	jumper
3808	4822 111 90163	jumper
3809	4822 111 90163	jumper
3810	4822 111 90163	jumper
3811	4822 111 90163	jumper
3812	4822 111 90163	jumper
3813	4822 111 90163	jumper
3814	4822 111 90163	jumper
3815	4822 111 90163	jumper
3816	4822 111 90163	jumper
3817	4822 111 90163	jumper
3818	4822 111 90163	jumper
3819	4822 111 90163	jumper
3820	4822 111 90163	jumper
3821	4822 111 90163	jumper
3822	4822 111 90163	jumper
3823	4822 111 90163	jumper
3824	4822 111 90163	jumper
3825	4822 111 90163	jumper
3826	4822 111 90163	jumper
3827	4822 111 90163	jumper
3828	4822 111 90163	jumper
3829	4822 111 90163	jumper
3830	4822 111 90163	jumper
3831	4822 111 90163	jumper
3832	4822 111 90163	jumper
3833	4822 111 90163	jumper
3834	4822 111 90163	jumper
3835	4822 111 90163	jumper
3851	4822 111 90163	jumper
3900	4822 116 52463	22k 5% 0,5W
3901	4822 116 52463	22k 5% 0,5W
3902	4822 111 30499	4,7Ω 5% 0,33W
3903	4822 116 52472	47k 5% 0,5W
3904	4822 116 52501	150k 5% 0,5W
3905	4822 116 52426	4,7k 5% 0,5W
3906	4822 116 52395	1,2k 5% 0,5W
3907	4822 116 52395	1,2k 5% 0,5W
3910	4822 116 52426	4,7k 5% 0,5W
3911	4822 116 52426	4,7k 5% 0,5W
3912	4822 116 52463	22k 5% 0,5W
3915	4822 116 52452	10k 5% 0,5W

6500	4822 209 72587	TCA0372DP2
6501	4822 209 73234	TDA8808T/C3
6502	4822 130 44121	BC338
6503	4822 209 73235	TDA8809T/C2
6504	4822 209 72587	TCA0372DP2
6510	5322 130 32962	BZV85-C6V2
6512	4822 209 83274	NJM4560D
6515	4822 130 30621	1N4148
6516	5322 130 42012	BC858
6517	5322 130 42012	BC858
6519	5322 130 30684	1N4002
6520	4822 130 42131	BF550
6523	4822 209 70422	MN4264-15
6525	4822 130 61207	BC848
6526	4822 130 61207	BC848
6527	5322 130 41983	BC858B
6530	4822 209 61776	MC68HC05C8P/CD593
6531	4822 130 42675	BC818
6535	4822 209 83163	LM833N
6536	4822 209 83163	LM833N
6538	5322 130 30684	1N4002
6540	4822 209 11157	SAA7220
6541	4822 209 73236	TDA1543
6542	4822 130 42675	BC818
6543	4822 130 42675	BC818
6544	4822 130 42675	BC818
6545	4822 130 42675	BC818
6547	4822 130 30621	1N4148
6548	4822 130 30621	1N4148
6549	4822 209 61759	SAA7310 GP/S5
6551	5322 130 30684	1N4002
6552	4822 130 30621	1N4148
6553	4822 130 30621	1N4148
6554	5322 130 42012	BC858
6555	4822 130 31981	BZX55-C3V9
6557	4822 130 30621	1N4148
6558	4822 130 40938	BC548
6561	4822 130 61207	BC848
6562	5322 130 42136	BC848C
6563	5322 130 42012	BC858
6564	4822 130 61207	BC848
6565	4822 130 61207	BC848
6568	4822 130 61207	BC848
6569	4822 218 20752	TOTX172
6570	4822 130 42675	BC818
6572	4822 130 34197	BZX55-C12
6577	4822 209 80808	MC7815CT
6580	5322 130 30684	1N4002
6581	5322 130 30684	1N4002
6582	5322 130 30684	1N4002
6583	5322 130 30684	1N4002
6584	5322 130 30684	1N4002
6585	5322 130 30684	1N4002
6586	5322 130 30684	1N4002
6587	5322 130 30684	1N4002
6591	4822 209 71579	TY40408 = MC7805CT selected
6592	4822 209 73233	MC79L05ACPRE
6900	4822 209 72226	U3090MG
6901	4822 130 81086	BZX55-C15
6902	4822 130 30621	1N4148
6903	4822 130 40938	BC548
6905	4822 130 30621	1N4148
6906	4822 130 30621	1N4148
6907	4822 130 30621	1N4148
6910	4822 130 40938	BC548

Miscellaneous

SK1	4822 276 12276	TACT switch display panel
SK2	4822 276 12276	TACT switch display panel
SK3	4822 276 12276	TACT switch display panel
SK4	4822 276 12276	TACT switch display panel
SK5	4822 276 12276	TACT switch display panel
SK6	4822 276 12276	TACT switch display panel
SK7	4822 276 12276	TACT switch display panel
SK8	4822 276 12276	TACT switch display panel
SK9	4822 276 12276	TACT switch display panel
SK10	4822 276 12276	TACT switch display panel
SK11	4822 276 12276	TACT switch display panel
SK12	4822 276 12276	TACT switch display panel
1502	4822 242 71349	11,2896 MHz X-TAL
1503	4822 242 70831	4 MHz CER. RES.
1510	4822 253 30009	FUSE 160mA T
1513	4822 130 90641	DISPLAY 6-MT-139G
5001	4822 146 30779	MAINS TRANSFORMER /02/05B
5001	4822 146 30841	MAINS TRANSFORMER /01B
5502	4822 157 53141	470µH 10%
5503	4822 157 53141	470µH 10%
BU2	4822 267 30881	CINCH SOCKET
	4822 492 63076	SPRING CLIP
BU1	4822 265 20291	MAINS INLET
SK0	4822 276 11309	MAINS SWITCH
	4822 256 30274	FUSE HOLDER /02B/05B
SK2	4822 276 12523	TACT SWITCH MAIN PANEL
	4822 600 70581	A-BOX MARANTZ
	4822 600 70579	EPS CUSHION

Tools

4822 322 40066	SERVICE CABLE (14P)
4822 397 30184	CD AUDIO SIGNALS
4822 267 50676	SERVICE CONN (14P)
4822 397 30096	AUDIO TEST DISC 5+5A
5322 130 32182	LED GREEN CQYG11
4822 397 30155	AUDIO TEST DISC 1kHz
4822 321 21255	SERVICE CABLE (4P)
4822 397 60141	AUDIO TEST MAX DIAM
4822 395 50145	TORX SCREWDRIVERSET
4822 395 50132	TORX SCREW SQUARE
4822 395 30204	13TH ORDER FILTER